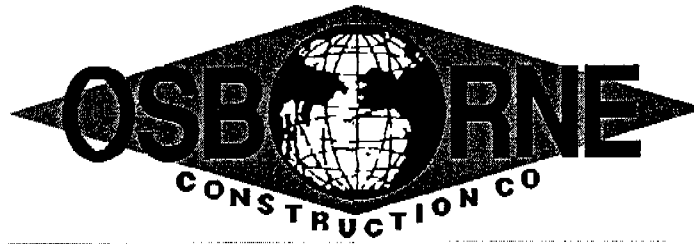


FY01
Replacement Family Housing
Ft. Wainwright, Alaska

OSBORNE JOB NO. 2173

ACCIDENT
PREVENTION
AND
SITE SAFETY PLAN

Transmittal 01015-1
Technical Specification Section 01015
Spec. Para. No. 1.4
Item No. 1
Contract No. DACA85-01-C-0026



FALL PROTECTION SAFETY PLAN

**FY-01 Replacement Family Housing
Fort Wainwright, Alaska**

(Rev. 3/02 Chris Seeley)

Osborne Construction Company is committed to providing a safe workplace for all employees. This includes providing fall protection as required by good safety practice and in accordance with all applicable State and Federal Regulations. To accomplish this, the attached Fall Protection Work Plan is to be implemented and maintained at this jobsite. The plan describes the fall hazards associated with major portions of the work and details the methods and procedures for installing, maintaining and using the fall protection systems provided. All employees will be made familiar with this plan and with the fall protection system(s) used for their particular task. Worker training is to be done prior to any employee performing work in a given area. Periodic safety meetings will be held which will focus on fall protection and any potential hazard in the work force.

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Fall Protection Work Plan
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Definitions

Anchorage - A secure point of attachment for lifelines, lanyards or deceleration devices.

Full Body Harness - A configuration of connected straps to distribute a fall arresting force over at least the thighs, shoulders and the pelvis with provisions for attaching a lanyard, lifeline or deceleration device.

Connector - A device which is used to couple (connect) parts of the personal fall arrest system and positioning device systems together. It may be an independent component of the system, such as a carabineer, or it may be an integral component of part of the system (such as a buckle or D-ring sewn into the body harness, or a snap hook spliced or sewn to a lanyard or self-retracting lifeline / lanyard).

Deceleration Device - Any mechanism, such as a rope grab, shock absorbing lanyard, automatic self-retracting lifeline / lanyard, etc., which serves to dissipate a substantial amount of energy imposed on an employee during fall arrest.

Deceleration Distance - The additional vertical distance a falling employee travels, excluding lifeline elongation and free fall distance, before stopping, from the point at which the deceleration device begins to operate. It is the measured distance between the location of an employee's body harness attachment point at the moment of activation (at the onset of fall arrest forces) of the deceleration device during fall, and the location of the attachment point after the employee comes to a stop.

Free Fall - The act of falling before the personal fall arrest system begins to apply force to arrest the fall.

Guardrail System - A barrier erected to prevent an employee from falling to lower levels.

Hole - A gap or void 2 inches or more in its least dimension, in a floor, roof, or walking / working surface.

Horizontal Lifeline - A rail, rope, wire or synthetic cable that is installed in a horizontal plane between two anchorages and used for attachment of a worker's lanyard or lifeline device while moving horizontally; used to control dangerous pendulum like swing falls.

Lanyard - A flexible line of rope, wire rope or strap which generally has a connector at each end for connecting the body harness to a deceleration device, lifeline or anchorage.

Leading Edge - The edge of a floor, roof or formwork for a floor or other walking / working surface (such as the deck) which changes location as additional floor, roof, decking or formwork sections are placed, formed or constructed. A leading edge is considered to be an "unprotected side and edge" during periods when it is not actively and continuously under construction.

Lifeline - A component consisting of a flexible line for connection to an anchorage at one end to hang vertically (vertical lifeline), or for connection to anchorages at both ends to stretch horizontally (horizontal lifeline), and which serves as a means for connecting other components of a personal fall arrest system to the anchorage.

Low Pitched Roof - A roof having equal to or less than a pitch of 4 to 12.

Personal Fall Arrest System - A system used to arrest an employee in a fall from a working level. It consists of an anchorage, connectors and body harness, and may include a lanyard, deceleration device, lifeline or suitable combinations of these.

Rope Grab - A deceleration device which travels on a lifeline and automatically, by friction, engages the lifeline and locks so as to arrest the fall of an employee. A rope grab usually employs the principle of inertial locking, cam / level locking, or both.

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Self Retracting Lifeline - A deceleration device which contains a drum wound line which may be slowly extracted from, or retracted onto, the drum under a slight tension during normal employee movement, and which after onset of a fall, automatically locks the drum and arrests the fall.

Shock Absorbing Lanyard - A flexible line of webbing, cable or rope used to secure a harness to a lifeline or anchorage point that has an integral shock absorber.

Walking / Working Surface - Any surface, whether horizontal or vertical, on which an employee walks or works, including, but not limited to, floors, roofs, ramps, bridges, runways, formwork and concrete reinforcing steel, but not including ladders, vehicles or trailers on which employees must be located in order to perform their job duties.

Wall Opening - A gap or void which is 30 inches or more high and 18 inches or more in width in a wall or partition through which an employee can fall to a lower level.

Responsibilities

1. The Site Superintendent is responsible for ensuring that all employees are familiar with the fall protection work plan and adhere to its guidelines. The Superintendent is also responsible for providing necessary fall protection equipment.
2. The jobsite shall obtain / maintain and store all necessary hardware to comply with this plan.
3. The Site Superintendent shall have the authority to make any additional recommendations, administer this plan and be responsible for supporting fall protection training through scheduling and implementation.

Fall Protection Plan

1. Each employee on a walking / working surface with an unprotected side or edge which is greater than 6 feet or more above a lower level shall be protected by the use of a guardrail system, or personal fall arrest system.
2. Each employee working near a leading edge, 6 feet or more, shall be protected from falling by the use of a guardrail system, or personal fall arrest system.
3. Each employee on walking / working surfaces shall be protected from falling through openings to lower levels by the use of a guardrail system, cover or personal fall arrest system. A guardrail system used at a hole shall adhere to the following.
 - a. Be erected on all unprotected sides or edges of the hole.
 - b. Have no more than two sides provided with removable guardrail system sections to allow passage of materials. When the hole is not in use, it shall be closed with a cover.
4. Covers for openings and holes in floors, roofs and other walking / working surfaces shall meet the following requirements.
 - a. Hinged covers of standard strength and construction and a standard railing with only one exposed side. When the opening is not in use, the cover shall be closed or the exposed side shall be guarded at both top and intermediate positions by removable standard railings.

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- b. A removable standard railing with toe board on not more than two sides of the opening and fixed standard railings with toe boards on all other exposed sides. The removable railing shall be kept in place when the opening is not in use and shall be hinged or otherwise mounted so as to be conveniently replaceable.
- c. All covers shall be secured when installed so as to prevent accidental displacement by the wind, equipment or employees.
- d. All covers shall be color coded or marked with the word "HOLE" or "COVER" to provide warning of the hazard.

Overhead Protection

- 1. When an employee is exposed to falling objects, each employee shall wear a hard hat and one of the following measures shall be implemented.
 - 1. Erect toe boards, screens or a guardrail system to prevent objects from falling from higher levels.
 - 2. Erect a canopy structure and keep potential fall objects far from the edge of the higher level so that those objects would not go over the edge if they were accidentally displaced.
 - 3. Barricade the area to which objects could fall, prohibit employees from entering the barricaded area, and keep objects that may fall far enough away from the edge of a higher level so that objects would not go over the edge if they were accidentally displaced.

Guardrail Systems

- 1. Guardrail systems shall be surfaced so as to prevent injury to an employee from punctures or laceration. Guardrail systems and their use shall comply with the following requirements.
 - 1. Top rails shall be capable of withstanding without failure a force of at least 200 pounds in any outward or downward direction, at any point along the top rail. If wire rope is used for top rails, it shall be flagged at not more than 6-foot intervals with high visibility materials. Wire rope being used for top rails shall be inspected frequently as necessary to ensure it continues to meet strength requirements.
 - 2. Mid rails shall be installed midway between the top rail and the walking / working surface. The mid rail shall be capable of withstanding without failure a force of at least 500 pounds applied in any outward or downward direction at any point along the mid rail. Wire rope being used for mid rails shall be inspected frequently as necessary to ensure it continues to meet strength requirements.
 - 3. Screens and mesh, when used, shall extend from the rail to the walking / working surface and along the entire opening between top rail supports. The screen or mesh shall be capable of withstanding, without failure, a force of at least 150 pounds applied in any outward or downward direction.

Personal Fall Arrest Systems

- 1. Personal fall arrest systems and their use shall comply with the following provisions.
- 2. **Inspection** - shall be inspected daily before each use by the user for wear, damage and other deterioration and defective components shall be removed from service.
- 3. The user is responsible for the safety equipment in his / her possession and for following all manufacturer=s instructions.

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1. **System Requirements** - when stopping a fall, personal fall arrest systems shall:
 - 1) Limit maximum arresting force on employees to 1,800 pounds when used with body harness.
 - 2) Be rigged such that an employee can neither free fall more than 6 feet nor contact any lower level.
2. **Hoisting Areas** - when a personal fall arrest system is used at a hoisting area, it shall be rigged to allow the movement of the employee only as far as the edge of the walking / working surface.
3. **Equipment Used During Falls** - personal fall arrest systems and components subjected to impact loading shall be immediately removed from service and shall not be used again for employee protection.

Body Harness

1. A body harness shall be used only for employee protection and not to hoist material.
2. A body harness shall be worn properly affording a snug, yet comfortable, fit and according to manufacturer=s instructions.

Connectors: D-Rings, Snap Hooks and Carabineers

1. D-Rings, snap hooks and carabineers shall be of the self locking and self closing type, have a minimum tensile strength of 5,000 pounds and be proof tested to a minimum tensile load of 3,600 pounds. All connectors shall be drop forged, pressed and formed steel, or made of equivalent materials. They shall have a corrosion-resistant finish with all surfaces smooth to prevent damage to interfacing parts of the system.

Lanyards and Lifelines

1. Lanyards and vertical lifelines shall have a minimum breaking strength of 5,000 pounds and shall be protected against being cut or abraded. Rope and straps (webbing) used in lanyards shall be made from synthetic fibers.
2. Each person shall be attached to a separate lanyard or lifeline.
3. Lanyards secured to a body harness (for fall protection) shall be secured in the center of the wearer=s back near shoulder level or above the wearer=s head.
4. Lanyards shall be secured in a manner so as to afford the least free fall distance possible up to a maximum of 6 feet and not allow contact with objects below.
5. Horizontal lifelines shall be designed, installed and used under the direction of the Site Superintendent as part of a complete fall arrest system which maintains a safety factor of at least two to one.
6. Self-retracting lifelines / lanyards that automatically limit free fall distance to 2 feet or less shall be capable of sustaining a minimum tensile load of 3,000 pounds. The use of an additional lanyard should be avoided when using self-retracting lifelines / lanyards. The latching device on the self-retracting lifeline / lanyard should be connected directly to the body harness using the existing D-ring.

Anchorage

1. Personal fall arrest equipment shall be independently attached to an anchorage (tie off point) capable of supporting at least 5,000 pounds for each employee attached or shall be designed, installed and used as part of a complete personal fall arrest system which maintains a safety factor of at least two, under the directions of the Safety Department and a Aqualified person@.

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2. A building structure (i.e., column, floor, steel grating and handrail) may be used as a tie off point if it is capable of supporting 5,000 lbs.

Positioning Device System

1. Positioning device systems shall be rigged such that the free fall distance is limited to a maximum of 2 feet and shall be secured to an anchorage capable of supporting at least twice the potential impact load of an employee=s fall or 3,000 pounds, whichever is greater, as determined by the Superintendent or Foreman.

Fall Protection Work Plan

1. Whenever there is the possibility of employees exposed to a hazard of falling 6 feet or more in height, a written fall protection work plan must be completed by the Superintendent. The Superintendent shall be required to analyze the work assignment using the fall protection work plan. Once the work plan has been developed, a copy shall remain at the jobsite for review. The work plan shall be reviewed by all employees assigned to that task prior to beginning work and shall be followed completely.

JOB HAZARD ANALYSIS (JHA)

Phase of Construction: - 2 nd Floor and higher carpentry, & roofing.	PAGE _ OF _
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ACTIVITY	HAZARD	METHOD(S) OF PROTECTION
Installation of siding, roof trusses, 2 nd floor joists & sheeting of each.	Workers exposed to potential falls from over 6' to 24' in Height.	<p>Training Requirements</p> <p><u>Training Program:</u></p> <ul style="list-style-type: none"> • Required for each employee exposed to falls • Recognition of hazards in the work area • Trained by a competent person in the following – <ol style="list-style-type: none"> 1. Nature of Fall Hazards in the work area 2. Procedures associated with chosen fall protection 3. Role of employees in the safety monitoring system 4. Limitations of equipment 5. Role of employees and standards requirements <p><u>Certification of Training</u></p> <p><u>Written Certification Record</u></p> <ol style="list-style-type: none"> 1. Name or ID of employee trained 2. Date of Training 3. Signature of trainer <p>Latest training certification shall be maintained</p> <p><u>Retraining Required when:</u></p> <ol style="list-style-type: none"> 1. Lack of employee understanding 2. Changes in workplace, equipment, procedures, etc. <p>Shock absorbing devices or decelerating devices are not allowed when installing 2nd floor floor joists</p>

ACTIVITY	HAZARD	METHOD(S) OF PROTECTION
Installation of 2 nd floor joists & sheeting.	Workers exposed to falls from 9'.	All workers will use ladders or walk planks to install joist and blocking, and the 1 st row of floor sheeting. Workers installing other rows will use single-point anchorage system with full body harness attached to positive lock retractable line or they may use a "Positioning Device System" having (1) no more than 2' of free fall; (2) 3000 pound anchor points or twice the potential impacting point; (3) snap locks (locking only) to be compatible with connecting point; and (4) a pre-use inspection.
Installation of 2 nd floor exterior walls	Exposed to falls of 9' to 17'	Workers will use a single-point anchorage or 1/2" horizontal static lines attached at each end with three wire rope clips properly installed (saddle method) spaced and torqued. Anchorage points must be capable of withstanding 5,000 pounds per employee or twice the maximum potential fall arrest load in a designed system (1,800 pounds per employee).

ACTIVITY	HAZARD	METHOD(S) OF PROTECTION
Installation of mono- or full-length roof trusses.		Workers will not be exposed to falls when using walk-plank system (See Bronco Scaffolding, photo #7) for mono-trusses at wall edge and inside or room at the attachment to glue-laminated beams. Planking not to exceed 6' above floor. When installing full-length 2 nd floor roof trusses workers will work off of walk planks on the inside area of the exterior wall and single walk plank at the centerline of trusses. In each case, planks are not to be installed over 6' above sub floor.
Installation of 2 nd floor fascia board and truss blocking/bracing.	Exposed to falls of 8' to 10'	Workers will be protected by a guardrail system installed at mono-truss fascia line 42" plus/minus 3" at top with midrail and 1 X 4 toe kick. Posts will be at least 2 X 4 spaced no more than 8' apart with structural grade lumber (1,500 lb-ft/sq').

ACTIVITY	HAZARD	METHOD(S) OF PROTECTION
Installation of full-length roof-truss sheeting.	Exposed to falls from 17' to 24'.	Workers installing sheeting will use ladders and or walk planks to install first row of plywood. Workers installing other rows will use a fall-arrest system with horizontal static lines made of 1/2" wire rope rigged between 2 fixed points. Anchorage points will be located at truss peaks. Wire Rope terminations will have three wire rope clips properly installed (saddle method) spaced and torqued. Anchorage points must be capable of withstanding 5,000 pounds per employee or twice the maximum potential fall arrest load in a designed system (1,800 pounds per employee).
Three-tab composition shingle roofing installation	Exposed to falls from over 6' to 24'.	Roofers will use roof anchors left in place by plywood sheeting crew and install their own horizontal static line with 5,000 pound load capacity in conjunction with full body harnesses and either retractable life line or rope grab attached to horizontal line. Each employee to be tied off to separate lines.

SINGLE-POINT ANCHOR

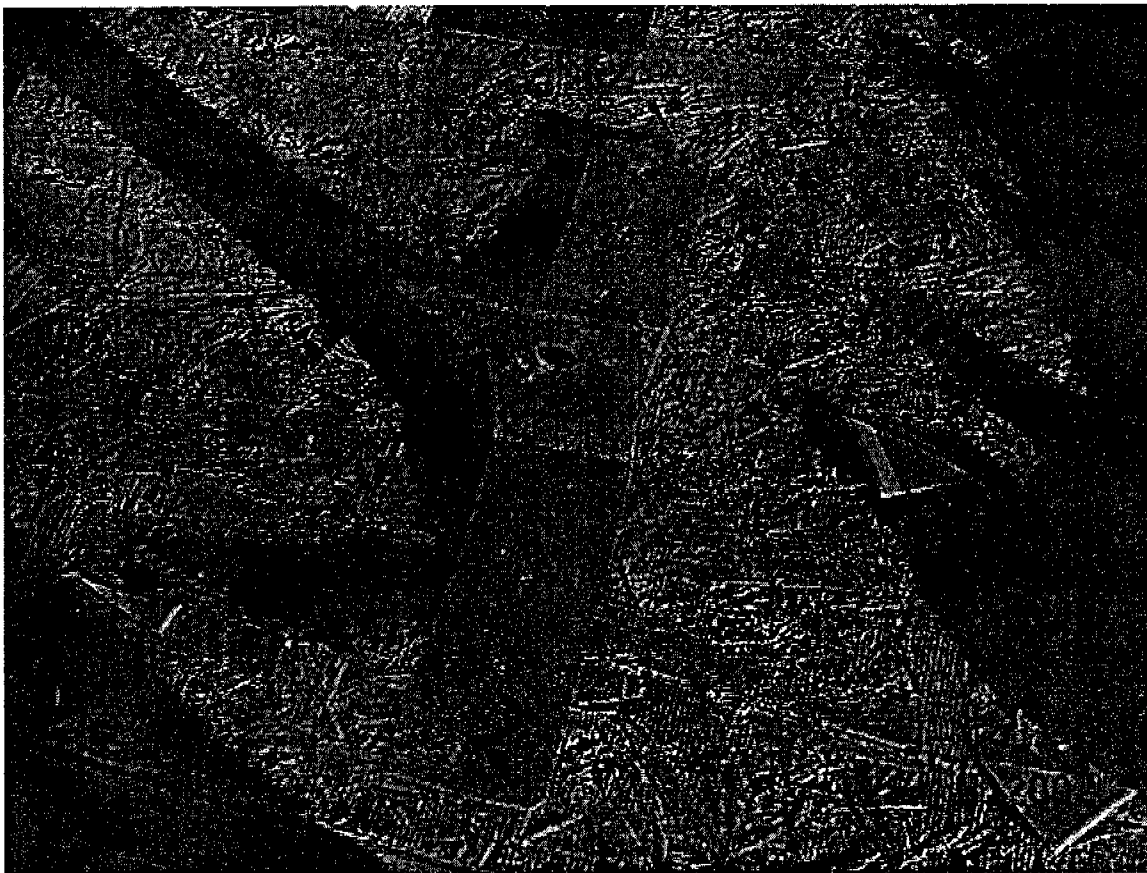


Photo 1: This Anchor can be placed in the middle of the 2nd floor deck for tie-off during erection of the 2nd floor walls.

This anchor can also be installed on the peak of trusses (before walking rolling into upright position) for tie-off during installation of plywood roof sheeting and for use by roofers when installing shingles/roofing.

FULL BODY HARNESS



Photo 2: Worker wearing full-body harness with lanyard (a), shock absorbing device (b), and positioning device (c).

SHOCK ABSORBER



Photo 3: Shock absorber attached to end of lanyard.

RETRACTABLE LIFE LINE

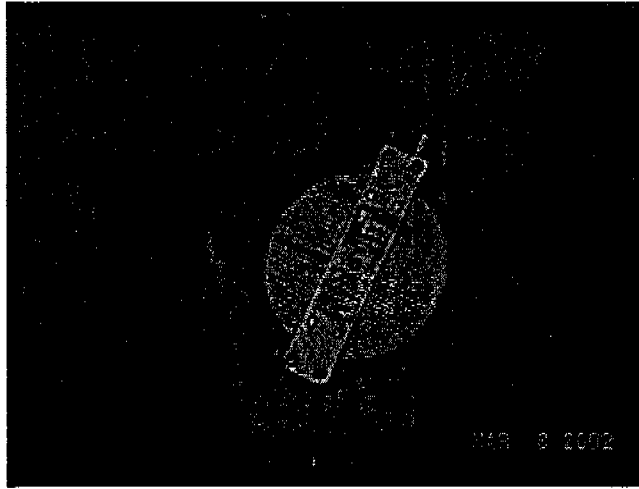


Photo 4: One make/model of retractable life line.

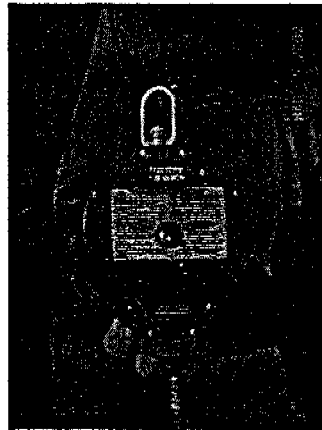


Photo 5: Another make/model of retractable life line.

RUSTGO ALL-TERRAIN SCAFFOLDING

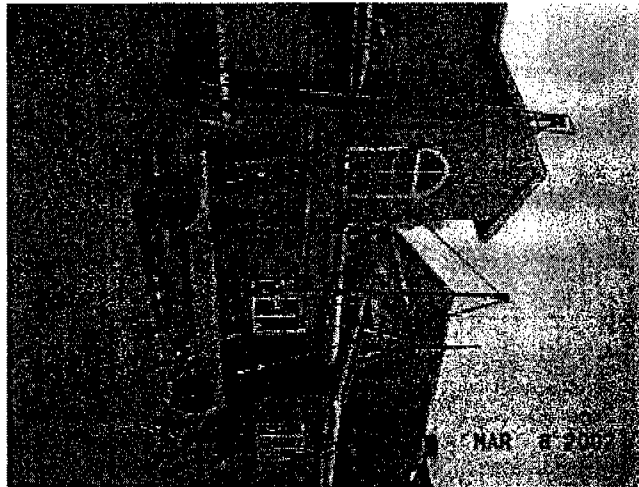


Photo 6: Working platform must be leveled before use. Working platform is completely enclosed with safety rails (top & midrail) as well as toe-boards & end gate. Body harness/tie-off not required when using fully enclosed scaffolding such as this.

BRONCO SCAFFOLDING



1. Bronco Scaffolding must be erected on a stable surface with legs adjusted to level Bronco working surface.
2. If the bottom step is elevated more than 16" off of platform or ground, access to walking plank will be from a step ladder.
3. The Aluma-Plank must be at least 18" wide and extend beyond the resting place on the Bronco at least 12", but no more than 18".
4. Each Bronco is rated for 300 pound. Two Broncos will support 600 pounds.
5. Safety instructions are located on the second step of the Bronco.
6. If the optional Bronco leg extensions are used and working platform height exceeds 6', then workers must use a tie-off system.